

CLAIMS

What is Claimed is:

5 1. An RFID transponder, comprising:
an RF front end adapted to receive an interrogating RF signal;
an analog circuit coupled to said RF front end and adapted to recover
analog signals from said received interrogating RF signal, said analog circuit providing
state information defining a desired state of said RFID transponder corresponding to
said analog signals;

10 a digital state machine coupled to said analog circuit and adapted to
execute at least one command in accordance with said state information;

a memory coupled to said digital state machine and adapted to store and
retrieve digital data responsive to said at least one command executed by said digital
state machine;

15 a power capacitor coupled to said analog circuit and deriving a voltage
rectified from said interrogating RF signal to charge said power capacitor, said power
capacitor thereby providing electrical power for said analog circuit, said digital state
machine and said memory; and

20 a state holding cell coupled to said digital state machine and being
adapted to maintain said state information during a loss in power provided by said
power capacitor due to lapse in receipt of said interrogating RF signal by said RF front
end.

25 2. The RFID transponder of Claim 1, wherein said state holding cell further
comprises an OR gate having a first input terminal operatively coupled to receive a
voltage corresponding to said state information, a second input terminal coupled to a
capacitor via a voltage comparator circuit having an input terminal and an output
terminal, and an output terminal providing said state information to said digital state
machine, said capacitor being charged by said voltage.

3. The RFID transponder of Claim 2, further comprising a diode coupled between said first input terminal and said input terminal of said voltage comparator circuit.

4. The RFID transponder of Claim 3, wherein said diode further comprises a Schottky diode.

5. The RFID transponder of Claim 3, wherein said diode further comprises a p-n junction diode.

6. The RFID transponder of Claim 2, further comprising a latch coupled between said first input terminal and said output terminal of said OR gate, said latch being operative to restore said voltage corresponding to said state information to said first input terminal following said temporary lapse in receipt of said interrogating RF signal.

7. The RFID transponder of Claim 1, wherein said memory further comprises an EEPROM device.

8. The RFID transponder of Claim 1, wherein said state information defines plural operating states of said digital state machine.

9. An RFID transponder, comprising:
means for receiving an interrogating RF signal;
means for recovering analog signals from said received interrogating RF
signal and providing state information defining a desired state of said RFID transponder
5 corresponding to said analog signals;
means for executing at least one command in accordance with said state
information;
means for storing and retrieving digital data responsive to said at least one
command;
10 means for providing electrical power for said RFID transponder derived
from said interrogating RF signal; and
means for maintaining said state information during a temporary lapse in
receipt of said interrogating RF signal.

10. The RFID transponder of Claim 9, wherein said receiving means further
15 comprises an RF front end.

11. The RFID transponder of Claim 9, wherein said recovering means further
comprises an analog circuit.

12. The RFID transponder of Claim 9, wherein said executing means further
comprises a digital state machine.

13. The RFID transponder of Claim 12, wherein said state information defines
20 plural operating states of said digital state machine.

14. The RFID transponder of Claim 9, wherein said storing and retrieving
means further comprises a memory device.

15. The RFID transponder of Claim 14, wherein said memory device further
25 comprises an EEPROM device.

16. The RFID transponder of Claim 9, wherein said maintaining means further comprises an OR gate have a first input terminal operatively coupled to receive a voltage corresponding to said state information, a second input terminal coupled to a capacitor, and an output terminal providing said state information, said capacitor being charged by said voltage.

17. The RFID transponder of Claim 16, further comprising a diode coupled between said first input terminal and said input terminal of said voltage comparator circuit.

18. The RFID transponder of Claim 17, wherein said diode further comprises a Schottky diode.

19. The RFID transponder of Claim 17, wherein said diode further comprises a p-n junction diode.

20. The RFID transponder of Claim 16, further comprising a latch coupled between said first input terminal and said output terminal of said OR gate, said latch being operative to restore said voltage corresponding to said state information to said first input terminal following said temporary lapse in receipt of said interrogating RF signal.

21. A method for operating an RFID transponder, comprising the steps of:
receiving an interrogating RF signal;
recovering analog signals from said received interrogating RF signal and
providing state information defining a desired state of said RFID transponder
5 corresponding to said analog signals;
executing at least one command in accordance with said state
information;
storing and retrieving digital data responsive to said at least one
command;
10 providing electrical power for said RFID transponder derived from said
interrogating RF signal; and
maintaining said state information during a temporary lapse in receipt of
said interrogating RF signal.

22. The method of Claim 21, wherein said maintaining step further comprises
5 receiving a voltage corresponding to said state information, and charging a capacitor by
said voltage.

23. The method of Claim 22, further comprising the step of preventing
discharge of said capacitor during said temporary lapse in receipt of said interrogating
RF signal.

20 24. The method of Claim 22, further comprising the step of restoring said
voltage corresponding to said state information following said temporary lapse in receipt
of said interrogating RF signal.